

Curriculum Vitae: David H. Collins

Education

Ph.D., Statistics, University of New Mexico (2009), advised by Aparna V. Huzurbazar; dissertation: *Nonparametric Estimation of First Passage Time Distributions in Flowgraph Models* (passed with distinction).
M.S., Statistics, University of New Mexico (2005).
B.A., Computational Mathematics (*summa cum laude*), Fordham University (1983).

Experience

- Currently Scientist, Statistical Sciences Group, Los Alamos National Laboratory.
- Postdoctoral Research Associate, Statistical Sciences Group, Los Alamos National Laboratory.
- Founder and principal consultant, Outback Software, Ltd., a consulting firm specializing in object-oriented systems analysis, design, and development. Projects included several trade finance applications for a large international bank, computer performance analysis for a credit card issuer, and simulation modeling of a complex financial transaction processing system for a large bank.
- IBM Corporation: Positions held included Consulting Systems Engineer, working on system design and analysis with large customers in the telephone and public utilities industries; Senior Programmer on a research team developing advanced user interface prototypes; Senior Instructor responsible for an education program in human factors and user interface design.
- Military veteran, U. S. Marine Corps.

Publications

Peer-reviewed and books

Collins, D. H., and Huzurbazar, A. V. (2012), "Multistate stochastic processes: a statistical flowgraph perspective," *International Statistical Review*, in press.

Collins, D. H., and Huzurbazar, A. V. (2012), "Prognostic models based on statistical flowgraphs," *Applied Stochastic Models in Business and Industry* **28**, 141-151 (DOI: 10.1002/asmb.884).

Collins, D. H., Anderson-Cook, C. M., and Huzurbazar, A. V. (2011), "System health assessment," *Quality Engineering*, **23** (2), 141-152.

Collins, D. H., and Huzurbazar, A. V. (2008), "System reliability and safety assessment using nonparametric flowgraph models," *Journal of Risk and Reliability* **222**, 667-674.

Mack, R., Marks, L., Collins, D., and Instone, K. (1996), "The CHI 95 Conference Electronic Publication: Introduction to an Experiment." *ACM SIGCHI Bulletin* **28**.

Collins, D. (1995). *Designing Object-Oriented User Interfaces*, Reading, MA: Addison-Wesley.

LANL technical reports/internal publications

- Collins, D. H., Freels, J. K., Huzurbazar, A. V., Warr, R. L., and Weaver, B. P. (2012), "Accelerated Test Methods for Reliability Prediction," *ADTSC Science Highlights 2012*, 134-135.
- Collins, D. H., and Huzurbazar, A. V. (2012), "Elicitation of expert judgment," LA-UR-12-01027.
- Collins, D. H., Freels, J. K., Huzurbazar, A. V., Warr, R. L., and Weaver, B. P. (2012), "Accelerated Test Methods for Reliability Prediction," LA-UR-12-00921 (submitted to *Journal of Quality Technology*).
- Collins, D. H., (2011), "The relationship between Fourier and Mellin transforms, with applications to probability and stochastic processes," LA-UR-11-03715.
- Collins, D. H., Warr, R. L., and Huzurbazar, A. V. (2011), "An introduction to statistical flowgraph models for engineering Systems," LA-UR-11-02850 (submitted to *Reliability Engineering and System Safety*).
- Warr, R. L., and Collins, D. H. (2011), "A Comprehensive Method for Solving Finite-State Semi-Markov Processes," LA-UR-11-01596 (submitted to *International Statistical Review*).
- Collins, D. H., Williams, B. J., and Huzurbazar, A. V. (2011), "Reliability modeling of nuclear power plant subsystems using statistical flowgraphs," *ADTSC Science Highlights 2011*, 130-131.
- Collins, D. H., Williams, B. J., and Huzurbazar, A. V. (2010), "A simple stochastic differential equation (SDE) model for crack growth," LA-UR-10-05813.
- Collins, D. H., Williams, B. J., and Huzurbazar, A. V. (2010), "Flowgraph analysis of RISMC passives benchmark 1," LA-UR-10-05812.
- Collins, D. H., Williams, B. J., and Huzurbazar, A. V. (2010), "Alternatives to constant-hazard models for piping failures," LA-UR-10-04862.
- Anderson-Cook, C. M., and Collins, D. H. (2010), "Evaluating environmental, condition-based and reliability data and model for prognostic health assessment," LA-UR-10-01399.
- Anderson-Cook, C. M., Lu, L., and Collins, D. H. (2010), "Evaluating data and models for environmental, condition-based and reliability in system health assessment: methods and examples," LA-UR-10-05891.
- Collins, D. H., and Huzurbazar, A. V. (2009), "Fourier-series inversion of empirical Laplace transforms," LA-UR-09-03450.
- Collins, D. H., and Huzurbazar, A. V. (2007), "Nonparametric solution of statistical flowgraph models," LA-UR-07-7084.
- Huzurbazar, A. V., Williams, B. J., and Collins, D. H. (2007), "Parametric and nonparametric flowgraph models with application to Bayesian multistate system reliability," LA-UR-07-5120.

Conference proceedings and technical reports (not peer-reviewed)

- Collins, D. H., Huzurbazar, A. V., and Anderson-Cook, C. M. (2010), "Statistical tools for prognostics and health management of complex systems," *Proceedings of the 57th JANNAF Propulsion Meeting*, Colorado Springs, CO.
- Davis, B., L. Marks, D. Collins, *et al.* (1994), "The Human Interface to Large Multimedia Databases," *Proceedings of the Conference on High-Speed Networking and Multimedia Applications*, San Jose, CA: IS&T/SPIE.
- Collins, D. (1990), "What Is an Object-Oriented User Interface?" *Proceedings of the Symposium on Object-Oriented Programming Emphasizing Practical Applications*, Poughkeepsie, NY: ACM/Marist College.

Presentations

- "Bayesian Multistate Models for Nuclear Power Plant Reliability," invited presentation, Cambridge, MA: IMS/ASA Spring Research Conference, June 13-15, 2012.
- "Multistate stochastic process modeling of nuclear power plant reliability," poster presentation, Santa Fe, NM: Conference on Data Analysis (CoDA), Feb. 29 - Mar. 2, 2012.
- "Multistate stochastic process modeling of nuclear power plant reliability," Dayton, OH: Air Force Institute of Technology Applied Mathematics and Statistics Colloquium, Feb. 9, 2012.
- "Reliability modeling of nuclear power plant subsystems using statistical flowgraphs," invited presentation, Miami Beach, FL: 2011 Joint Statistical Meetings.
- "Prognostic models based on nonparametric and semiparametric flowgraphs," invited presentation, Gaithersburg, MD: Joint Research Conference on Statistics in Quality, Industry, & Technology (JRC), 2010 (joint work with A. V. Huzurbazar).
- "Statistical tools for prognostics and health management of complex systems," Colorado Springs, CO: 57th JANNAF Propulsion Meeting, 2010 (joint work with A. V. Huzurbazar, C. M. Anderson-Cook).
- "Nonparametric Estimation of First Passage Time Distributions in Flowgraph Models," Glorieta, NM: Annual meeting, Albuquerque Chapter of the American Statistical Association, 2008.
- "Nonparametric density estimation for flowgraph models with applications to system reliability," Columbia, SC: Current and Future Trends in Nonparametrics, 2007 (joint work with A. V. Huzurbazar).
- "Nonparametric density estimation for flowgraph models with applications to system reliability," Glasgow: Mathematical Methods in Reliability, 2007 (joint work with A. V. Huzurbazar)..
- "Object-Oriented User Interfaces," Vancouver, BC: ACM Conference on Object Oriented Programming Systems, Languages and Applications, 1992.

Professional societies

Senior life member of the Association for Computing Machinery (ACM); senior member of the American Society for Quality (ASQ); member of the Institute of Electrical and Electronics Engineers (IEEE), American Statistical Association (ASA), Institute of Mathematical Statistics (IMS); Chapter Representative (2010-2012) of the Albuquerque Chapter of the ASA; Past President (1993) of the Hudson Valley Chapter of the Human Factors and Ergonomics Society.

Other professional activities

Reviewer for *The American Statistician*, *Technometrics*, *Mathematical and Computer Modelling*, *Journal of Risk and Reliability*, and *Statistics in Medicine*.